

TURTLE MOUNTIAN COMMUNITY COLLEGE
GRANT AWARD # n00014-99-1-0969

AN ADAPTIVE SYSTEMIC INITIATIVE OF TRIBAL COLLABORATION
FOR INCREASING NATIVE AMERICAN PARTICIPATION IN
MATHEMATICS, SCIENCE AND ENGINEERING

TECHNICAL REPORT

Turtle Mountain Community College in partnership with the North Dakota State University, Fargo, ND, was awarded a grant to support activities designed to stimulate the interest of Indian youth from the North Dakota reservations in careers such as engineering and those involving higher level mathematics, science and technology skills. This technical report represents the first term beginning 01 July 1999 through 30 September 1999. The objective of this three-month award was to plan the five-year project with the partners. The amount of the award for this period was \$13,962.00.

The project began with a planning session 12 to 14 July 1999, hosted by the NDSU Engineering Department at the NDSU campus. Representatives from the North Dakota Tribal Colleges and NDSU participated. The purpose of the meeting was to review the objectives of the ONR grant and to chart a path for achieving these objectives. The Agenda and minutes of the meeting are in Appendix A.

The planning resulted in the identification of a number of partnerships that needed to be nurtured.

- The Sunday Academies are to be carried out using distance learning technology as well as real-time contact with the high school students. The NDSU staff worked with the North Dakota Interactive Video Network Director to set aside eight time slots for the Sunday Academies. (See Appendix B.) The Turtle Mountain Community College identified a technician to manage the network at the tribal college when the Sunday Academies are in session.
- The high school program required the identification of student mentors, college faculty, and high school teachers who would be involved in the program. The Project Director identified the college faculty and two high school mathematics teachers who would be involved in the Sunday Academies and summer math/science camps. With limited resources from the Navy grant, it was necessary to identify additional financial resources for the Sunday Academies and summer camps. The Project Director submitted a proposal to the local Tribal Children's Coordinating Committee to request student stipend funds and additional financial resources to cover the cost of the staff. The proposal was approved and the project received an additional \$11,500 to support the project between 01 September 1999 and 30 June 2000.
- The participants agreed that the private sector should be contacted to foster relationships that would result in internships, scholarships, and coop-ed opportunities

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for students. The NDSU Director of the Group Decision Center assumed the responsibility for this activity. Carol Davis, Turtle Mountain Community College, made contact with their tribal government and received a small grant from the tribe to help support the high school students who are tribal members. The funding will be used to help defray costs from attending the Sunday Academies and summer sessions.

- Since the first Sunday Academy was scheduled for early October 1999 and the group was not going to meet until September, it was agreed that the NDSU physics instructor would develop the first Sunday Academy. The lesson would involve the students in an activity where they would measure the height of a water tower and determine how much water it holds.

The second planning session was held at Turtle Mountain Community College September 16 to 18, 1999. The purpose of the meeting was to update the participants on activities that had been undertaken and report progress; to plan the content of the Sunday Academies; to introduce the NDSU representatives to the Turtle Mountain Chippewa culture; to involve the TMCC faculty, high school teachers, and student mentors; and address private sector relationships. The agenda and minutes of the meeting are in Appendix C.

The meeting resulted in a number of activities that needed to be addressed.

- The Sunday Academy topics that had been suggested for the Sunday Academy topics were sent to the participants by the NDSU engineering department for ranking. The results are in Appendix D.
- Since the high school teachers were both traveling with students over the week-end and could not attend the session, Gale Harms, TMCC faculty representative, was assigned to arrange for an interactive video network meeting between the NDSU faculty and the Turtle Mountain Sunday Academy staff.
- NDSU Director of Group Decision Center will arrange for NDSU to receive tribal newspapers in the multicultural office.
- NDSU will design a scholarship application.
- Course development needs to move forward. There are plans to deliver ENGR 111 Introduction to Engineering as a distance learning course in the Spring 2000.
- TMCC will share the names of other tribal Children's Coordinating staff located on the other North Dakota reservations with the North Dakota tribal colleges. They may want to use the program as a funding source to supplement the Navy grant when their reservation comes into the program.
- NDSU Director of Group Decision Center will contact IBM and other private industry to help meet the objectives of the Navy project.

- NDSU needs to address the scholarship(s) available to tribal college transfer students majoring in engineering.
- The financial arrangements between NDSU and TMCC need to be addressed by both of the business offices. This will be facilitating by the representatives involved in this grant.
- The NDSU and TMCC representatives need to continue to dialogue with the North Dakota Interactive Video Network staff to facilitate the transmittal of Sunday Academy instruction from NDSU to TMCC.
- It was decided that the NDSU faculty member who is responsible for developing the first Sunday Academy topic will travel to Turtle Mountain to be in the classroom with the students. The engineering faculty will be on the interactive video network classroom at NDSU.
- Gale Harms and Carol Davis will work with the Sunday Academy topics and design the integration of Turtle Mountain tribal cultural material into the topics.
- There is a need to develop a brochure for the project that can be used to inform the public about the program and be used as a student recruitment application as well. The brochure was developed. A copy is in Appendix E.
- The local papers have carried stories about the project. Copies are in Appendix F. In addition, Dr. Bob Pieri and Carol Davis appeared on a Public Broadcasting TV program in September where they gave information about the Navy project.

Standard Form 269 is in Appendix G.

Standard Form 298 is in Appendix H.

Conclusion

Turtle Mountain Community College and North Dakota State University have met the objectives of the planning grant. The staff is in place for the program. The Sunday Academy instructional planning is complete. Student recruitment is complete and the students have been selected. The scholarship process is complete. Dissemination of information about the program is ongoing. Leverage with other agencies and the private sector has begun and is also ongoing. This project has the potential to become a success model for other tribal colleges across Indian country.

APPENDIX A

AGENDA

AN ADAPTIVE SYSTEMIC INITIATIVE OF TRIBAL COLLABORATION FOR INCREASING NATIVE AMERICAN PARTICIPATION IN MATHEMATICS, SCIENCE AND ENGINEERING

OFFICE OF NAVAL RESEARCH (ONR) FUNDED PROJECT

MEETING

Monday, 12 July 1999

1:00-4:30 p.m.

Klefstad Conference Room, Alumni Center, NDSU

WELCOME AND INTRODUCTION	1:00 PM
PURPOSE OF THE MEETING	
ONR PROJECT OBJECTIVES AND HIGHLIGHTS	
PROJECT DURATION AND BUDGET	
PROJECT MANAGEMENT	
BREAK	2:30-2:45 PM
PRIORITIZE ACTIVITIES	
TASK GROUPS	
ADJOURN	4:30 PM

AGENDA

AN ADAPTIVE SYSTEMIC INITIATIVE OF TRIBAL COLLABORATION FOR INCREASING NATIVE AMERICAN PARTICIPATION IN MATHEMATICS, SCIENCE AND ENGINEERING

OFFICE OF NAVAL RESEARCH (ONR) FUNDED PROJECT

MEETING

**Tuesday, 13 July 1999
8:00 a.m.-4:30 p.m.**

Klefstad Conference Room, Alumni Center, NDSU

COFFE AND ROLLS	8:00-8:30 am
HUMANITIES INITIATIVE Dr. Thomas Riley	8:30-8:45 am
MATHEMATICS INITIATIVE Dr. William Martin	8:45-9:00 am
TOUR OF COLLEGE OF ENGINEERING	9:00-10:00 am
BREAK	10:00-10:15 am
DISCUSSION OF ACTIVITIES	10:15-12:00 pm
SUNDAY ACADEMY SCHOLARSHIPS	
LUNCH	12:00-1:00 pm
DISCUSSION OF ACTIVITIES (Continue)	1:00-3:00 pm
HS SUMMER CAMPS COLLEGE SUMMER CAMPS	
BREAK	3:00-3:15 pm
DISCUSSION OF ACTIVITIES (Continue)	3:15-4:30 pm
COURSE DEVELOPMENT AND DELIVERY	
ADJOURN	4:30 pm

AGENDA

**AN ADAPTIVE SYSTEMIC INITIATIVE OF TRIBAL COLLABORATION
FOR INCREASING NATIVE AMERICAN PARTICIPATION
IN MATHEMATICS, SCIENCE AND ENGINEERING**

OFFICE OF NAVAL RESEARCH (ONR) FUNDED PROJECT

MEETING

**Wednesday, 14 July 1999
9:00 a.m.-12:00 noon.**

Klefstad Conference Room, Alumni Center, NDSU

COFFEE AND ROLLS	9:00 am
CONTINUE DISCUSSION OF ACTIVITIES	9:15 am
COURSE DEVELOPMENT AND DELIVERY	
HS SUMMER CAMPS	
COLLEGE SUMMER CAMPS	
NEXT MEETING AT TMCC	11:30 am
WRAP-UP AND SUMMATION	11:45 am
ADJOURN	12:00 noon

**AN ADAPTIVE SYSTEMIC INITIATIVE OF TRIBAL COLLABORATION
FOR INCREASING NATIVE AMERICAN PARTICIPATION
IN MATHEMATICS, SCIENCE AND ENGINEERING**

OFFICE OF NAVAL RESEARCH (ONR) FUNDED PROJECT

MINUTES OF MEETING

Klefstad Conference Room, Alumni Center, NDSU

Monday, 12 July 1999, 1:00 p.m.-4:30 p.m.

Tuesday, 13 July 1999, 8:00 a.m.-4:30 p.m.

Wednesday, 14 July 1999, 9:00 a.m.-12:00 noon

The purpose of the meeting was to discuss the details and develop plans of action for the activities included in the proposal, particularly in the context of the reduced - amount awarded. The meeting was announced to the representatives of all the five tribal colleges and NDSU. Invitations were extended also to individuals involved in similar tribal colleges-related initiatives at NDSU to discuss meaningful collaboration in working towards the common goals.

Attendance

Carol Davis (PI, TMCC), Robert Pieri (Co-PI, NDSU), G. Padmanabhan (Co-PI, NDSU), Wei Lin (NDSU), Floyd Patterson (NDSU), Sharon Cobb (NDSU), Ayse Sahin (NDSU), William Martin (NDSU), Douglas Kurtze (NDSU), Laurel Vermillion (SBC), Erich Longie (CCCC), Bennett Yellow Bird (UTTC), Thomas Riley (NDSU), Joan Carlson (Rep. Pomeroy's office), Shawn Ferguson (Sen. Conrad's office), Steve Bergeson (University Relations), Jaclynn Davis (TMCC)

Agenda (copy attached)

July 12 (1:00 p.m-4:30 p.m)

Dr. Padmanabhan greeted the participants and explained the purpose of the meeting. He requested the participants to introduce themselves and the introductions followed.

Ms. Davis gave a brief description of the project objectives.

Dr. Pieri presented the 'student pathways' and the 'activities linkage' charts of the proposal to bring the participants up to speed. He also presented the budget approved by the ONR, management structure and the time schedule of the project.

Dr. Padmanabhan pointed out that some activities were disallowed and some had to be scaled down. Tribal college curriculum assessment, infrastructure development, and co-op activities are disallowed. Sunday Academy, summer camps and course development and delivery will have to be scaled down to remain within the awarded budget.

It was suggested that we prepare a comparative chart between the originally requested and the finally approved budget, a revised time schedule of the proposed activities, and a revised management structure chart to reflect the change in the budget.

Ms. Carol Davis said that TMCC will prepare and submit a subcontract to NDSU based on the awarded amount as indicated in the proposal as soon as the Navy disbursement is made to TMCC.

Ms. Cobb suggested that we draft a letter to the area businesses requesting them to sponsor mentoring activities. A list of potential businesses was compiled. She will draft a letter. The letter will announce the project award and will include objectives and a brief description of the project, opportunities to partner, and different areas to partner such as Sunday academy, mentoring and summer camps.

Discussion occurred on seeking additional funding from other sources to carry out the activities that were disallowed by the ONR or the activities that could not be accommodated within the ONR budget. State senators' offices were suggested as potential sources for supplementary funding. A presentation of the project objectives and highlights during lunch on Tuesday to the North Dakota State senators was proposed and agreed upon.

It was decided to take one activity at a time and work out the details. Sunday academy, scholarships and some course development and delivery activities needed immediate attention since they are included early in the 2nd period of the budget whereas summer camps are scheduled only later in the 2nd period and subsequent periods. The schedule for program evaluation was discussed. The evaluator will be brought into the project early in period 2 to facility the data gathering process.

Sunday Academy

Discussion occurred on the number of sites to be included, recruitment, topics and format, dates and cost per site. Assuming ten participants from a site, each additional site would cost approximately \$ 3300.

Meeting adjourned.

July 13 (8:00 a.m-4:30)

Dr. Thomas Riley, Dean of Arts, Humanities and Social Sciences of NDSU, presented to the group a proposal that he is working on to establish a Humanities Center at NDSU. He wanted to know if the tribal colleges had interest in collaborating on the proposal. Ms. Carol Davis and Erich Longie mentioned that the State Historical Society has an Indian Advisory board from the Reservations who might assist if the project is funded.

Dr. William Martin of the Mathematics Department at NDSU presented a summary of activities of a project that he will begin to direct shortly. The project, 'Statewide Systemic Initiative to Improve the Supply of High School Teachers', is funded by NSF under its Math, Science and Technology Program. Looking at ways of increasing the number of science and math teachers graduating in the State and providing better training for them in math and science teaching is the focus of the project. 'Enquiry-based' model for teaching is ideal for science and engineering. Dr. Martin also suggested that the high school teachers from the Reservations attend the annual statewide Science and Math Teachers Conference. Some funding may be available for teachers to attend. A combination of learning by examples and by axioms may be the best method to teach science and math.

The representatives from the tribal colleges were given a tour of the Civil and Mechanical Engineering laboratory facilities. Dr. Pieri and Dr. Lin explained to them how some of the products of student projects and simple laboratory experimental setups could be used for motivating the students to pursue science and engineering pathways. The labs can be used effectively to benefit the summer camp participants as well.

During lunch, Dr. Pieri made a presentation to the representatives from the state congressmen and senators' offices on the project objectives and highlights.

Mr. Steve Bergeson, from the University Relations office was present during the presentation and he later interviewed Ms. Carol Davis, Dr. Pieri and Dr. Padmanabhan to write a story for the local media.

Ms. Carol Davis distributed a brochure on a conference 'Walking in Harmony towards Wellness' to be held at Turtle Mountain, July 20-22.

Ms. Jaclynn Davis of TMCC talked about an upcoming Rural Systemic Initiative Project meeting (August 11-13) in Fargo and invited the PI's to make a presentation in the meeting. She distributed the draft program schedule for the meeting with vacant spots left out for this group to fill in.

Discussions on activities continued.

Sunday Academy

The cost per site was discussed again and confirmed as \$ 3300 based on 10 students per site. If the tribal colleges other than the ones that are currently scheduled want to come into the Academy, they need to find the additional money. In the meanwhile, this group will also actively seek additional funding.

For the first offering during the 2nd period of the budget, Turtle Mountain Community College will be the only site participating with an expected enrolment of 20 students.

The recruitment is to be confined only to grades 9 through 12. The TMCC will start recruiting as soon as possible. The TCC faculty, HS teachers and the NDSU faculty for the Academy will be decided by September meeting at TMCC (Sept. 16-18). The potential for involving college student mentors was discussed.

A group will be formed at NDSU and will work on the potential material to be presented at the Academy sessions in consultation with TMCC and high school teachers. Science Olympiad and similar science/mathematics problem-solving activities were recommended for consideration as strategies. The group may use IVN for Academy topic discussions. A list of potential topics and details of the first week Academy plan will be presented to the Turtle Mountain project meeting for discussion.

The following dates and format were suggested for Academy sessions:

The Academy will be scheduled 11:00 a.m.-4:00 p.m., on the second Sundays of the months October 1999 through May 2000. The tribal college sites and NDSU will be on IVN from 11:00 a.m.-1:00 p.m. and again from 3:00-4:00 p.m. for each session of the Academy. Lunch will be between 1:00-1:45 p.m.

Introduction of the project should not be for more than 30 minutes.

	<u>Time</u>	<u>Activity</u>
IVN	11:00	Problem Introduction
	12:00	Background Info and Team Setup
	1:00	Lunch, Project Work
	2:00	Presentation Preparation
IVN	3:00	Presentation
	4:00	Discussion and Closure

The idea of a Junior Academy for junior high school students was raised; but was thought appropriate for a future proposal.

Scholarships

The TCC scholarships for the 2nd period of the budget were modified in the following manner:

Five scholarships, one for each tribal college @ \$ 1200 per student per year.
Supplies amount @ \$ 300 per student per year for each tribal college.

The announcement, development of suitable criteria and an application form, and selection of candidates will be implemented by TMCC for the tribal colleges and by NDSU for the NDSU scholarships.

Because of the non-availability of a candidate for the Graduate Scholarship at NDSU, it was suggested that the amount be used for the Academy, and/or Course Development and Delivery categories.

A subgroup will be formed to develop brochures and time schedules for administering scholarships and the group will present a report at the Turtle Mountain meeting.

Meeting adjourned.

July 14 (9:00 a.m.-12:00 noon)

Mr. Bergeson's draft of the story was discussed to check for accuracy of names and amounts involved and any other comments for relaying back to him.

Discussion continued on activities.

Course Development and Delivery

Because of the short lead-time available for the 2nd period of the budget for course development and delivery, only one course partially developed for another proposal was considered. It was decided to develop two courses in the 2nd period and deliver one course over IVN in Spring 2000.

NDSU Math 103 was suggested for delivery. This is an already developed web-based course offered by the Math Department. Dr. Sahin volunteered to provide more info on the course and the feasibility of extending it to tribal colleges.

Dr. Pieri will develop a course similar to ENGR 111 for delivery and present the details in the next meeting at Turtle Mountain (Sept. 16-18). The tribal college representatives were supportive of the ENGR 111 type of course, particularly to attract students into engineering.

The topics (Maths, Physics, Chemistry, Engineering) for the two courses to be developed need to be decided based on the needs of the tribal colleges. The curriculum assessment activity was not funded. Regardless, we need to determine the topical areas in which the courses will have to be developed.

Use the course development money for some assessment in the 2nd period. This was another suggestion.

The TCC's were requested to send their academic program catalogs to Dr. Padmanabhan.

Discussion on course development and delivery, and summer camps will continue in the Turtle Mountain meeting (Sept. 16-18).

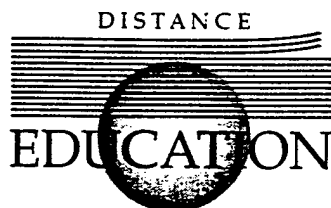
Next Meeting at TMCC

Next meeting is at Turtle Mountain scheduled for September 16-18. Representatives of the ONR will be in attendance. Suggestions were made to ask for additional support, to include activities to provide Native American cultural experience and to provide a report of progress up until that time. Ms. Carol Davis will develop an agenda and communicate to the rest of us.

ONR Project Management Meeting at Atlanta, Georgia.

Two representatives from TMCC and one representative from NDSU will be attending this national meeting for all project awardees (Aug 10-11). The travel cost will come from the unused amount remaining in the NDSU and the TMCC meetings.

APPENDIX B



North Dakota Interactive Video Network (ND IVN)

NDUS Distance Education, University of North Dakota
PO Box 8384; Grand Forks, ND 58202-8384

NORTH DAKOTA UNIVERSITY SYSTEM

140 Gamble Hall

Phone 701-777-6486

Fax 701-777-6353

To: Bob Pieri, NDSU
G. Padmanabhan, NDSU
Wei Lin, NDSU
Carol Davis, TMCC

From: John Burbank
IVN Director

Date: September 8, 1999

Re: Sunday Academy

I'm sorry I will not be able to attend the meeting you have planned for September 14-15 at Turtle Mountain Community College (TMCC) regarding the ONR funded project. I appreciated the opportunity to learn more about this interesting educational program a few weeks ago when we met with the NDSU personnel involved. The North Dakota Interactive Video Network (ND IVN) staff want to do all we can to help you have a successful program. Since I can't meet with you, I wanted to clarify several points regarding the use of IVN for the Sunday Academy.

1. I don't know if I told you that the normal hours IVN operates on Sundays are 2:00 P.M. - 8:00 P.M. If you start the Sunday Academy at 11:00 A.M., we will have to schedule a network technician to be on call at 10:45 or earlier one Sunday each month for this event. For the convenience of the IVN technicians, I would like to request that you consider starting the Sunday Academy at 12:00 noon or 1:00 P.M. if you feel 2:00 P.M. is too late to start. Both NDSU and TMCC will also need to arrange for a classroom technician outside the normal IVN hours of operation on Sunday.
2. It is not unusual for us to have some problems connecting sites on Sunday. This is primarily due to the fact that the telephone and computer network personnel try to take advantage of the weekends to do maintenance on their networks, and when they do, it sometimes affects IVN or specific IVN sites. As a result, the IVN technician on call may need to go to the IVN office in Grand Forks or in Bismarck in order to get the system running on Sunday. If David Belgarde agrees, I think it might be wise to plan to connect NDSU and TMCC at least one hour early on the dates you have the Sunday Academy scheduled, so we can be reasonably certain everything is working properly. This means the IVN classroom equipment at both sites will need to be turned on in order for them to check the connection.

3. It is my understanding that the grant project budget does not include any funds for IVN costs, and that IVN was included as an in-kind contribution in the proposal. If you work on grant project funding in the future, I would appreciate it if you would visit with me prior to submitting the grant proposal. We usually ask the grant project to pay the standard technician fee (\$10/hour/site) and/or the telephone line charges (\$80/hour) if the granting organization is willing to pay these costs. Sometimes the grantor will not pay both costs, but will pay either the technician fee or the line costs. Since these costs were not included in this grant project budget, TMCC and NDSU will need to provide the classroom technician at their respective sites for the Sunday Academies. Also, since the program is a TMCC grant, the IVN budget will not reimburse TMCC for the \$10/hour technician fee or the \$15/hour we normally pay for use of the TMCC T1 telephone line. We will reimburse NDSU ITS for the \$10/hour technician fee if the grant can't pay it. This will be true for both the Sunday Academies and the 1 credit Introduction to Engineering course.
4. Even if you only use IVN for two hours in the beginning each Sunday and again for only one hour at the end, we will schedule the event on IVN for the entire time and leave the sites connected for the full five hours, so you can use the system at any time if you wish. You will need to decide if you want the classroom technicians present for the first two hours and the last hour or the full five hours. The normal IVN procedure is to require that a site be scheduled for at least three hours on Sunday in order to make it worthwhile for the classroom technician to come in. Is there a possibility that one of the adult coordinators for this program at TMCC and NDSU could be trained to serve as the classroom technician to avoid the need for hiring a technician for the Sunday Academies?
5. We have not entered the Sunday Academy on the IVN schedule yet, because the starting time was still under discussion. **You will need to let us know after your meeting on September 15 what time you want them scheduled.** Please work with Bill Gorneau and Tammy Cummings regarding all necessary campus arrangements. Either Bill or Tammy can send the correct time and dates to be scheduled to June Piper.

If you have any questions about this memo, you may contact David Belgarde (777-4232), as I will not be available for several weeks starting Thursday, September 9.

cc: Sandy Sprafka, NDSU Distance Education
Tammy Cummings, NDSU-IVN Site Coordinator
David Belgarde, IVN Network Manager
Bill Gourneau, TMCC-IVN Site Coordinator
June Piper, IVN Administrative Secretary

APPENDIX C



Turtle Mountain Community College

P.O. Box 340
Belcourt, North Dakota 58316

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Turtle Mountain Band
Of
Chippewa Indians

•
Charter Member
American Indian
Higher Education
Consortium

OFFICE OF VICE-PRESIDENT
CAROL A. DAVIS

Navy Grant Meeting September 16-18, 1999

AGENDA

Thursday, September 16, 1999

4:00 pm	Introductions	
4:15 pm	Minutes of Fargo Meeting	Dr. Padmanabhan
4:30 pm	TMCC Tour	Carol Davis
5:30 pm	Overview of NDSU Engineering Department	Dr. Pieri
5:45 pm	High School Teachers	
6:30 pm	Dinner	

Friday, September 17, 1999

8:30 am	Continental Breakfast	
8:45 am	Welcome	Dr. Gerald Monette, President, TMCC
9:00 am	Prayer Cultural Information	Francis Cree
9:30 am	Progress Update & Discussion Sunday Academy	Dr. Padmanabhan
10:00 am	Sunday Academy Objectives	Dr. Pieri

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Accredited by North Central Association of Colleges and Schools Commission on Institutions of Higher Education
30 North LaSalle, Suite 2400, Chicago IL 60602

10:30 am	Break	
10:45 am	Progress Update and Discussion Course Development	Dr. Patterson
11:15 am	Progress Update and Discussion Summer Camps	Dr. Lin/Carol Davis
11:45 am	Progress Update and Discussion Co-op and Mentoring	Sharon Cobb
12:15 pm	Lunch	
1:30 pm	Financial Update	Leonard Dauphinais
2:00 pm	Research Presentation	Dr. Scott Hanson and TMCC Students
3:00 pm	Student Research in Navy Project	Dr. Padmanabhan
3:45 pm	Break	
4:00 pm	Interactive Video Network Update	UND/IVN Representative
4:30 pm	Reservation Tour	Carol Davis
6:00 pm	Dinner	

Saturday, September 18, 1999

9:00 am	Continental Breakfast	
9:30 am	Evaluation	Carol Davis
10:00 am	Progress Update and Discussion Scholarships	Dr. Pieri/Carol Davis
10:30 pm	Recruitment	Carol Davis
11:00 pm	Open Discussion	

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MATHEMATICS, SCIENCE AND ENGINEERING**

OFFICE OF NAVAL RESEARCH (ONR) FUNDED PROJECT

MINUTES OF THE MEETING (9/26/99 version)

***TURTLE MOUNTAIN COMMUNITY COLLEGE
ROOM 124***

THURSDAY, SEPTEMBER 16, 1999

4 PM-6 PM

FRIDAY, SEPTEMBER 17, 1999

8:30 AM- 5:30 PM

SATURDAY, SEPTEMBER 18, 1999

9 AM- 12:30 PM

PURPOSE

To discuss the status of the program development as it related to the following:

- 1. Sunday Academy**
- 2. Course Development**
- 3. Summer Camps**
- 4. Co-op, Mentoring and Shadowing**
- 5. Student Research Projects**
- 6. Scholarships**
- 7. Recruitment**
- 8. Evaluation**

In addition, update and discussion of the financial management and the integration of the interactive video network in Sunday Academy and the Introduction to Engineering Course for Spring Semester.

The meeting was announced to the representatives of the five tribal colleges, NDSU, the Interactive Video Network, and Dr. Katie Blanding, Office of Naval Research.

ATTENDANCE

PROJECT RESOURCE PARTICIPANTS

Cree, Francis	Dunseith, ND	263-4251	
Davis, Dan	Interstate Engineering	252-0234	
Peltier, Justin	TMCC/Student		
Poitra, Barb	TCSCC	477-5255	winona@utma.com
Sprafka, Sandy	NDSU/IVN	231-8688	sprafka@plains.nodak.edu

KEY PLAYERS

NAME		AFFILIATION	PHONE	E-mail
Anderson	Terry	UTTC/Const Tech	255-3285 ext. 242	walland2@excite.com
Cobb	Sharon	NDSU/GDC	231-7188	cobb@badlands.nodak.edu
Davis	Carol	TMCC/Acad VP	477-7867	cadavis@giizis.turtle-mountain.cc.nd.us
Demaray	Lizz	Ft. Berthold TC/Pres	627-4738	
Harms	Gale	TMCC/Science	477-7867	no e-mail at this time
Kurtze	Doug	NDSU/Physics	231-7048	kurtze@plains.nodak.edu
Lin	Wei	NDSU/Civil Eng	231-6288	wlin@badlands.nodak.edu
Longie	Eric	Little Hoop TC/Pres	766-4055	ericstev@hoopster.little-hoop.cc.nd.us
Padmanabhan	G., "Pad"	NDSU/ Civil Eng	231-7043	gpadmana@plains.nodak.edu
Patterson	Floyd	NDSU/ Elect/ Compt Eng	231-7617	patters@plains.nodak.edu
Pieri	Bob	NDSU/Mech Eng	231-8673	pieri@badlands.nodak.edu
Vermillion	Laurel	Sitting Bull TC/Acad VP	854-3861 ext. 2193	laurelv@sbc.edu
TM HS ONR FACULTY				
Aalund	Renee	TMHS-Science	477-6471 ext. 615	
LaVallie	Keith	TMHS-Science	477-6471 ext. 615	
Phahl	Miles	TMHS-Math	477-6471 ext. 640	
Schoenborn	Kimberly	TMHS-Math	477-6471 ext. 629	

AGENDA Reference your agenda.

September 16, 1999

4:00 PM-6:00 PM

Carol Davis greeted the meeting participants; explained the change in meeting participants (the Navy representative(s) were unable to attend the meeting); reviewed and distributed the revised agenda; called for a review and approval of the July meeting minutes. The minutes were approved.

Carol Davis led a tour of the TMCC facilities which gave us all a sense of the resources that will be available to the Sunday Academy and Summer Academy students.

The high school teachers were not available for the meeting this afternoon.

Action Item: Pad and Gale Harms will arrange a meeting with the high school teachers on IVN before 9/30/99.

The tour was followed by a discussion of this project with a reporter of the Turtle Mountain Times, Logan Davis.

Discussion topics included: the funding source, why they were interested in diversity, who is eligible, the role of research in the project, how the NDSU/TCC collaboration occurred, the anticipated impact on the students (Pieri estimated that 232-250 "student years" will be directly impacted during the course of the project.), the NDSU faculty, the Tribal College faculty and the high school teachers.

Another discussion evolved centering on the availability of Native American Newspapers on campus and the value of having this resource on campus for the students.

We will receive copies of the story and a picture of the group when the paper is published.

Action Item: Cobb will check on the availability of the tribal newspapers on campus both in the Library and the Multi-Cultural Office. NDSU Library only gets Indian Country Today weekly published in Rapid City, SD. I contacted Tom Bremer, associate director of the Library and he suggested submitting a prioritized request to him and he would discuss it with the appropriate committee. The Multi-Cultural Office gets all ND tribal newspapers.

Meeting adjourned to the Prairie Lanes for dinner at 7:30 PM.

September 17, 1999

8:30 AM-6:00 PM

Welcome

TMCC President, Dr. "Carty" Monette extended a welcome to the group and distributed a brochure describing the new campus. He noted that there was a very conscious effort made to retain and reference the culture in the design and details of the campus.

He highlighted some of the unique features of the college ranging from the heating system, to cedar trees planted along the drive were a gift from another tribe, to the cedar design in the railings, to the meaning of the medicine wheel in the primary entrance, to significance of the pipestone (represents the blood spilled by tribes through history) used in several places including around the medicine wheel, to the diamond shaped designs on the exterior walls representing the four directions and the Turtle Mountains.

Prayer and Culture Traditions and Tribal History

Francis Eagleheart Cree, the Turtle Mountain Spiritual Leader offered a prayer for our meeting and the project we are developing.

Francis Cree shared valuable cultural information and Native American historical perspectives with us. In addition, he emphasized the deep reverence the Native Americans have for education.

Children Services Coordinating Committee

Barb Poitra is the TM representative on this state committee which was founded by Ruth Meyer, ND Lt. Governor. The CSCC reimburses the four tribes and the State regional offices for 20% of the work that has been done in the community serving children and families. These dollars are then reinvested in the community and at TM this will be directed to the student stipend component of the Navy project.

Barb Poitra also explained the Sacred Child Project which is a wrap-around service for students who have fallen through the cracks. This project starts with two basic questions: *What do you want? And What do you need to get there?* Talking Circles are used to address the strengths of the child.

Action Item: Carol Davis will send the names of the other reservation contacts for CSCC to the relevant meeting participants.

The Student Perspective

DAN DAVIS, TMCC/NDSU ALUM

Dan Davis is an alum of both TMCC and NDSU Civil Engineering who is currently

employed at Interstate Engineering in Jamestown, ND. He talked with us about *What brought him to where he is?* The first big change according to Dan was going from the new facilities at the high school to TMCC at the old campus.

What was a meaningful and necessary condition for Dan were the people who took time to listen to him and kept an open mind and assisted him. As a pre-engineering transfer from TMCC he spent 4 ½ years at NDSU. The move to NDSU was a big change/a real challenge. He had to stand alone/Depend on himself and the major adjustments came in the area of financial, social, and basically obstacles of every kind. He was on an Indian Health Scholarship which helped, but college was very expensive.

Dan now works for Interstate Engineering and he is working at home on \$7M contracts of Rural Development Funding and USDA funding which are sewer and water projects.

Action Items/Suggestions to Help Other Native American Students

- 1. Faculty are key to the process, they need to be sincere, trustworthy and get across to students.***
- 2. Need a support base:***
 - a. Knew everyone at home on the reservation/knew no one at NDSU***
 - b. Very large classes, e.g., NDSU chemistry class was 200/TMCC chemistry was 15; Students are very hesitant to approach the teachers, didn't feel comfortable requesting a tutor//had been used to one-on-one at TMCC***
 - c. Could have benefited from some financial planning advice on how to handle the monies***
 - d. 75% of Dan's friends didn't make it***

Potential Approaches Suggested in the Discussion:

- 1. Need for Orientation to Survive including financial planning, where to go for support, what social support exists***
- 2. Mentors who are older students***
- 3. Tutors/study groups from NASA or AISES***
- 4. Attending TMCC first gives more time to mature***
- 5. Develop a campus network including faculty/ library materials, i.e., tribal newspapers, an available fall back contact, etc.***
- 6. Rites of Passage into College to make the transition more successful at TMCC and NDSU on topics from how to schedule a meeting with the instructor to how to budget the monies***
- 7. Use the Navy project to develop the Pathway***
- 8. Integrate the students classes with the employer contacts***
- 9. Project work in groups--note that some students get excluded if obviously from***

different backgrounds//Be aware that they may be coming from two different worlds.

JUSTIN PELTIER, TMCC FRESHMAN

Justin graduated from TM High School in May. He was accepted into the IBM Alliance for Learning and Vision for Under-represented Americans.

This program allowed him a summer work/study experience in Rochester, MN. He worked 6 hours a day and also took a calculus course. This summer he was on the manufacturing line and next summer he will rotate to design. IBM also provided him a mentor for this program.

He realized the benefit of having working in the previous TMCC Sunday Academies and he also had a very strong math background. In the freshman year 20-25 of his class took math and sciences in the /sophomore year the number dropped to 15/ in junior year the number dropped to 10/ and the senior year only 5 remained in math/science courses.

This addresses the compelling need for this project to succeed.

Action Items:

- 1. Cobb check out the potential of IBM slots for the Navy project students*
- 2. Cobb check the Dartmouth Youth Summit/U of MN program with Samuel Moore*
- 3. Cobb find dollars for tutors from IBM/3M/GPS and others*

Process Discussion

This discussion began with Pieri's LIFE Slide: see attached.

Topics areas included:

1. Need to know student populations--Use of pre and post skills tests, gather data regarding student interests so planned activities will be appropriate
2. Review the 199 courses and revise as needed
3. Develop a 399 course for transfer students
4. Explore shadowing for high school students
5. Summer Academy--Classroom work or to create interest--both
Step One: Interest Hook at the HS level
Step Two: Learning
Step Three: Research
Step Four/Five: Cultural Relevancy of educated work force, economic development
6. A question was raised whether or not there is a stigma regarding females in technology at TMCC, this is non-existent, e.g., Jenelle Patnaude and April Poitra Walker
7. Evaluation meeting with John Hoover needs to be early in October
8. Research/Scholarship needs to start at NDSU October 1.

Action Items:

- 1. Pad and Pieri need a list of TC graduates at NDSU for scholarship awards ASAP*

2. *Pieri needs to get the word about the 3M scholarship out to the high schools on the reservations*
3. *Patterson will finalize the scholarship forms*

Financial Update

Leonard Dauphinas reviewed the process which will be a subcontract with NDSU. He will work out the details with Carole Peterson. NDSU can start the drawdown now for the first period's full amount and indirect by just checking the line items/amount.

Carol Davis reminded everyone that a carryover will actually reduce the total amount. Tribal College are on reimbursement so TMCC will need the original receipts

Action Items:

1. *Pieri and Pad visit Carole Pederson Monday with a copy of the grant and the updated budget*
2. *Leonard will work with Carole on the drawdown/Carole will establish a grant # and initiate grant funding at NDSU*
3. *Pad/Pieri/Patterson will start awarding the scholarships October 1/this will be a test run of the new scholarship forms (see Scholarship discussion notes 9/18/99)*

Research Presentation

Dr. Scott Hanson directed two research projects which each used college students who were trained by Dr. Hanson to, in turn, train the high school participants. These projects were described by William James and Shannon Hajicek:

1. USDA (Department of Agriculture) Water Quality Project involving 12 students, 86 sites taking 3 readings per site testing for PH, temperature, oxygen content, nitrate phosphates, and turbidity.
2. NIH (National Institute of Health) Mosquito Project involving students and tests from sloughs every mile. Twenty-six species were identified just on the reservation. This project continues next summer.
3. Other research discussed was a fish population study, which focus on the rings in the scales to determine growth rates; and a leafy spurge beetle study to determine species.

Interactive Video Discussion (IVN)

Sandy Sprafka defined IVN today as a 1) Pick up or display video picture and audio system with 2) wiring that links the state and Carol Davis explained 3) that the tribal colleges have T-1 line that provide their connection and that they pay for the connectivity to IVN.

KEY STRATEGIES DEVELOPED FROM THE DISCUSSION:

- A. Always have alternative plans in case of problems with the system and develop

them now using fax/speaker phone/video tapes of the class/Internet course supplement on line using an Internet Chat Room Session

B. Mentors in the IVN classroom are critical to a successful IVN class in this project we will have high school teachers, TMCC faculty and a technician Carol Davis that the technician at TMCC has become a student advocate.

C. Develop a pre and post survey for each session

Sandy made general suggestions about using IVN including:

1. Consider being at the site in person the first time
2. Keep class size in mind
3. Vary presentation formats, integrate in videos, power point, demonstrations, etc
4. Use plain, bold font
5. Write with thick markers
6. Use landscape mold
7. Avoid white paper
8. Avoid herringbone, stripes, busy patterns as well as white and red colors

FYI POINTS:

Video conferencing will be at NDSU in about one year.

Tribal Colleges received a LAAP Grant (Learning Anytime Any Place) and will have 40 courses on line using Internet.

Action Items:

IVN Director Memo Response

Following the discussion of John Burbank's memo, these response were agreed on and Sandy Sprafka will communicate them to Mr. Burbank:

- 1. The 11 AM - 4 PM timeframe is the necessary time frame given the transport time and the meeting locations.*
- 2. Remind JB that IVN charges do not apply when the course exchange comes from NDSU.*
- 3. The State already receives monies from the Tribal Colleges; Little Hoop and Turtle Mountain to pay the highest line charges.*
- 4. Dates to be reserved:*

October 4, 3 PM or October 6, 4 PM

October 10, 11 AM- 4 PM // every 2nd Sunday of the month at that time

- 5. Pieri and Gale Harms need to schedule an IVN meeting with the High School teachers: Miles Pfahl and Kim Schoenborg, math and Renee Aalund and Keith LaVallie, science (See Key Players for contact listings)*

OTHER:

- 6. Always have alternative plans in case of problems with the system*

develop them now using fax/speaker phone/video tapes of the class/Internet course supplement on line using an Internet Chat Room Session

7. Develop a pre and post survey for each session Which might use the SGID Model: What three things did you like? What three ways could it be improved? Need to develop with John Hoover, the project evaluator.

A. Carol Davis will e-mail him Wei Lin's Sunday Academy Topic Grid

B. Pieri and Davis will schedule a meeting or conference call before 10/10/99 with Hoover and project's key players

IVN Action Item:

1. Sandy and Eric Longie work together on the IVN /Tribal College relationship.

September 18, 1999

9 AM - 12:30 PM

REVISED AGENDA

Sunday Academy Topics (continued from Process Discussion pg. 6)

Spring IVN Course

NA ONR Scholarship

Summer Camp at NDSU

Summer HS Camp at TM

Wrap-up

Sunday Academy Topics:

Several topics were discussed. Integrating Native American references to the tools, skills, and applications was recommended. The suggested format included Problem Set-up/Group Work/ Discussion and Evaluation

Topic One: Kurtze will present this topic, How tall is the Belcourt water tower?

How much water does it hold?

Action Items:

1. Kurtze will actually do this presentation on site and Pieri will join from NDSU

2. Harms will be the resource to assist with the development of NA references

Lin lead the discussion on the other possible topics for the Sunday Academy and developed a grid with topic descriptions and a ranking format. See attachment to this e-mail

IVN Course/Spring Semester

Pieri will present the Introduction to Engineering 111 which will include activities, videos, industrial interface, skills set discussions, scheduling transfer curriculum, etc. to begin 1/10/2000

Action Items:

- 1. Review of the current course to again integrate relevant references to NA culture*
- 2. Develop industrial interface elements, i.e., speakers, activities, etc*
- 3. The IVN schedule for Spring Deadline is October 15!!*

Discussion of ONR Scholarships for NDSU Tribal College Transfer Students

These scholarships should be performance/need based criteria for students in math/science/engineering areas.

The following are the recommended elements for the scholarship form:

***NAME//HOME ADDRESS//SOCIAL SECURITY NUMBER//NUMBER OF
DEPENDENTS//TRANSCRIPT ON FILE AT NDSU//OTHER
SCHOLARSHIP//DEADLINE INFORMATION// PARAGRAPH ABOUT GOALS
AND ANTICIPATED OUTCOMES//RENEWAL BASED ON "REASONABLE
PROGRESS TOWARD GRADUATION"***

Tribal College Scholarships

This fall there will be one second year studentship/ per tribal college. The application and dispersement process of these scholarships are locally determined.

NDSU Scholarships

This fall there are two \$5,000 scholarships and one \$1,000/per semester research scholarship available for Tribal College transfer students at NDSU. Discussion of these scholarships was incomplete.

Action Items:

- 1. Continue the discussion of the application and dispersement process*
- 2. Determine the eligible students keeping in mind that they need to be TC transfer students*

Summer Programs

TC mentors will spend one week on NDSU's campus prior to the TC Summer Camp where they will work with the high school students.

Action Items:

- 1. Need to develop program plan for the week*
- 2. Need to develop a network of employers for interfacing with technology and the world of work.*

Wrap Up Discussion

See the Action Items.

ADDITIONAL ACTION ITEM:

NEED TO DEVELOP A BROCHURE FOR THE PROJECT :

SCHOLARSHIPS

SUNDAY ACADEMIES

SUMMER CAMPS

COURSES AND OTHER ACTIVITIES

APPENDIX D

INTEROFFICE MEMORANDUM

TO: CAROL DAVIS, G. PADMANABHAN, BOB PIERI, FLOYD PETERSON, DOUG KURTZE, SHARON COBB, BILL MARTIN, LAUREL VERMILLION, GALE HARMS

FROM: WEI LIN

SUBJECT: SUNDAY ACADEMY TOPIC SELECTION

DATE: 10/22/99

In the following paragraphs, please find my summary on Sunday Academy topic ranking, 8 suggested topics for Period 2, and proposed schedule and NDSU faculty for each of the projects.

I have received 11 votes (6 NDSU faculty, 3 TCC representatives, and 2 high school teachers) for Sunday Academy topics ranking. Votes came in different formats. Some people only ranked part of the 17 topics listed, some only ranked first 8, and some selected 8 topics for the first year without ranking them. To facilitate my statistical analysis, ranking number 4 was assigned to the topics which were among the top 8 but not ranked. Number 13 (midpoint between 9 and 17) was assigned to the remaining ones if they were not ranked. The results of my analysis using equal weights are presented in Table 1. (See attached MSExcel file) The top ranked 8 topics are:

1. Height and volume of a water-tower.
2. How to make ice-cream
3. Science of pizza making
4. Sound and music
5. Shadows and reflections
6. Floating and sinking
7. Methods of moving heavy objects; and
8. Rockets and forces

It is interest to find that people with different background ranked topics differently (see Table 2). Rockets and Forces, and Electricity and Magnets received higher ranks from tribal college people, but relatively low ranks from NDSU faculty. On the other hand, Ciphers and Codes received a relatively high rank from NDSU faculty, but low ranks from TCC people. Chemistry and Biology received low ranks. Only a few persons with more chemistry and biology background gave them higher ranks. One reason for

lower ranking of these two topics could be a result of less detailed information provided.

Based on our discussions on Sunday (10/10/99) over the IVN, I decided to include Biology Lab to this period's topic and redo the ranking by giving more weights to the votes from TCC representatives and high school teacher. The reasons for having the Biology Lab include:

1. TMCC has a well equipped biological lab. We can show high school students the lab and attract them to go to TMCC;
2. Biological topic, such as biological growth in water, is closely related to the nature and environment, and has an important place in the American Indian culture;
3. Some biological research has been done at TMCC by the faculty and students; and
4. Gale Harms, the Sunday Academy coordinator for the TCCs, is the biology instructor at TMCC.

I did a statistical analysis on the votes again by using different weighting factors. For NDSU faculty, a weighting factor of 1 was used. A weighting factor of 1.1 was used for TCC representatives and high school teacher. The results of this analysis are shown in Table 3. This weighted analysis changed ranks of some of the topics. The major impact is on the last couple topics among the top 8. Ranking of Rockets and Forces changed from 8 to 6. Methods of Moving Heavy Objects dropped from 7 to 9. Computer and Data Process gained from 9 to 8.

Based on this final analysis and including biology in this period's topics, I propose the topics, schedule, and NDSU faculty as follows:

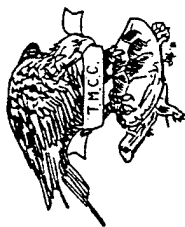
Topic	Date	NDSU Faculty
Height & Volume of a Water-Tower	10/10/99	Doug Kurtze
Science of Making Pizza	11/14/99	Wei Lin
Sound and Music	12/10/99	Peterson/Kurtze
Floating and sinking	1/9/00	Padmanabhan
Shadows and Reflections	2/13/00	Doug Kurtz
Rockets and Forces	3/12/00	Bob Pieri
How to make ice-cream	4/9/00	Bob Pieri
Lifes in Water	5/12/00	Wei Lin

The topics were not scheduled according to their ranks. Lifes in water was scheduled as the last one because we can take students out to take water samples in May. Ice-cream may not be that attractive when the weather is cold. In March, we may able to go outdoor testing the rockets.

Should you have any questions or concerns regarding the topics, schedule, and persons assigned to each topic, please let me know or contact Dr. Padmanabhan.

As we discussed on Sunday, we are going to have a Sunday Academy meeting tomorrow in the CE library at 3:00 pm. I look forward to seeing you there.

APPENDIX E



SUNDAY ACADEMY

AT

TURTLE MOUNTAIN
COMMUNITY
COLLEGE



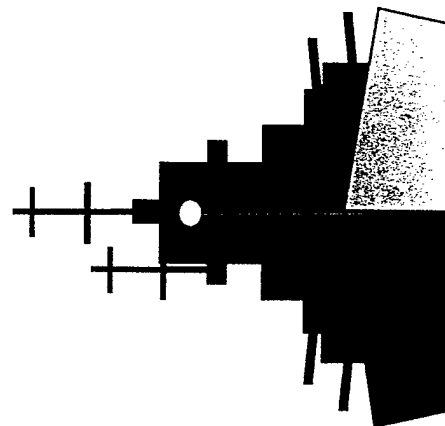
TURTLE MOUNTAIN COMMUNITY COLLEGE
P.O. BOX 340
BELCOURT, NORTH DAKOTA 58316
TELEPHONE (701) 477-5605 FAX (701) 477-5028

APPLICATION DEADLINE:
OCTOBER 4, 1999

SEND APPLICATION TO:
GALE HARMS
TMCC
PO BOX 340
BELCOURT, ND 58316

APPLICANTS WHO ARE
ACCEPTED WILL BE NOTIFIED
BEFORE OCTOBER 7, 1999

FUNDING AGENCY:
This Program has been funded by
Office of Naval Research, DOD



Purpose:

To generate an interest in math, science and engineering among high school students.

Students will:

Meet together in an informal friendly atmosphere at Turtle Mountain Community College and be presented with day-to-day problems involving simple math, physics, chemistry, and engineering. The problems will be presented from North Dakota State University over the interactive video network (IVN). Work will be supervised by high school teachers, TCC faculty and TCC student facilitators. All participating TCCs work on the same set of questions and the results will be discussed with other tribal colleges through the IVN at the end of the five-hour session. A lunch and adequate breaks will be provided to make the session comfortable.

Students Incentive Award:

Each student that attends all eight sessions and participates in the problem solving exercises will be eligible for a cash award of \$200. Other awards will be prorated on their record of attendance and participation.

Eligibility:

All high school students are eligible to participate in the academy. No specific criteria for selection are prescribed. The academy problems are designed to be junior or senior level.

Expected outcomes:

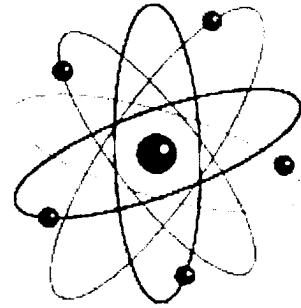
1. Attracting more high school students into math, science and engineering careers.
2. Improving problem solving skills of students entering TCC math, science and engineering programs.
3. Improving the understanding of the importance of math, basic science and engineering principles.

When:

There will be eight (8) academies scheduled. The academies will be held monthly with the first academy scheduled for October 10, 1999. The schedule for the remaining academies will be distributed at the first meeting.

Contact Person:

Gale Harms
Instructor at TMCC

**Student Application Form**

Name _____
Birth Date _____
Tribal Enrollment # _____
SS # _____
Address _____
City _____ State _____ Zip _____
Home Phone _____
Parent/Guardian _____
Present Grade Level _____
School _____
Person to contact in case of emergency: _____
Phone # _____

Consent of parent or guardian

As the parent/guardian of the student in the above application, I certify that my son/daughter/ward has my permission to participate in the Sunday Academy program. It is my understanding that he/she will be subject to the regulations of the Turtle Mountain Community College during the program. I understand that should a health emergency arise, I will be notified, but if I cannot be reached by telephone, I authorize such medical treatment as is deemed necessary by competent medical personnel.

Signature of Parent/Guardian _____

Date _____

Signature of Student _____

Date _____

APPENDIX F



(L-R) Sharon Cobb, Doug Kurtz, Laurel Vermillion, Floyd Patterson, Carol Davis, Dr. Bob Pieri, Dr. G. Padmanabhan, Terry Anderson, Dr. Wei Lin, Erich Longie

Made In The Shade

Tribal colleges and NDSU plant the seeds for strong curriculums in math, science and engineering with Office of Naval Research grant

Logan J. Davis
Times Reporter

BELCOURT — "You have to first plant acorns if you're going to enjoy the shade of a tree."

With those words, Professor Bob Pieri may have unknowingly coined a slogan for a new initiative in the state's tribal colleges. The North Dakota State University instructor was one of several college officials gathered at the Turtle Mountain Community College (TMCC) recently to discuss a project that has immense potential in the education of Native Americans.

TMCC and the NDSU College of Engineering in Fargo has entered into what is perceived as the beginning of a long relationship in producing more Native American graduates in the math, science and engineering fields.

The four other tribal colleges in the state will eventually join TMCC in the effort through a five-year grant from the Office of Naval Research (ONR) of over one and-a-quarter million dollars (\$1.27 million), but TM-

CC has taken the lead in the project by being the first site ready to host the program's educational components.

The heart and soul of the program will be the Sunday Academies and summer sessions that will be conducted. TMCC will be the main site for the summer sessions, at least in the beginning. Each year, one other site will be added at other tribal colleges.

The high school component of the program is designed to attract, recruit, and prepare the Native American students for entry into each tribal college's by the preparatory involvement. This component will address the implementation of curriculum at the high school level to complement the career goals of students seeking careers in the aforementioned fields. Upon

graduating from high school, the students in the program will be strongly encouraged to enter the local tribal college to seek an Associate of Science degree so that they can stay with the program.

The Native American tribal college component contains scholarships and summer program participation in NDSU in Fargo and is designed to nurture, retain and prepare the students for their chosen career in math, science and engineering. Development and implementation of the curriculum courses will also be a major focus of the ONR grant.

"This is a great opportunity for all the young tribal members of our tribe and the four other tribes in the state," indicated

See "SHADE" p.3A



From 1A: "CLIMBING"

subbed from them. Ray Poitra (Uniband CEO) is the one that deserves a lot of the credit for this partnership we now have. It was due to his foresight that he came up with the initial plan to work together on this contract. It's important that our two companies like ours pull our resources together to get the work done and provide jobs to our people. I'm proud of the fact that my company is thirty-eight percent Native American — and the majority of those are from back home. I like it when I see my Indian people working side-by-side with the non-Indian and being just as capable."

The grand opening was also attended by District Nine State Senator Dennis Bercier, Turtle Mountain Tribal Chairman Richard "Jiggers" LaFromboise, and Councilmen Ron Peltier and Leon Morin.

"Senator Bercier did an Chippewa victory song on the drum and did just a fantastic job. The song was in honor of all the victories that Native Americans have been achieving in business. Some of these people from the IRS and SBA had never seen something like that before and I'm sure that left a lasting impression on them," Laducer recalled. "Just having people like Mr. Rossotti, our congressional people, the Bismarck-Mandan mayors and Chambers of Commerce and all the tribal leaders here show that they have a great concern for the success of Indian business. Now, we're going to show them that they can depend on Indian business to do the job for them."

Laducer also noted that the construction work on the facility expansion was done mostly by Turtle Mountain Chippewa contractors from across the state. The facility not only had the building addition, but the employees and visitors at Laducer & Associates now have a spacious new parking lot.

Laducer also gave ample credit to the Turtle Mountain Community College in Belcourt for providing training to many of his company employees.

"What took place last Monday overall was one of the highlights of my life and proves that teaming together is what makes success like this possible," Laducer concluded.

Laducer is a former member of the Small Business Administration national board of directors and is currently holds a post on the Bismarck-Mandan Chamber of Commerce.

From 1A: "SHADE"

TMCC Vice-President Carol Davis. "We're looking forward to being part of such an important effort as getting our Indian students into and through these challenging but very rewarding fields of study. It's truly a team effort and has been from the beginning of this project when we actually found out about the availability of this grant."

At the meeting at TMCC on Sept. 16-18 with NDSU officials and representatives from other tribal colleges, Davis explained

working professionals in math, science, and engineering from the private sector. The NDSU engineering faculty who are part of this project will act as mentors to the Native American students which will only serve to enhance the students chances for success in their chosen field.

Dr. Pieri, NDSU professor in the mechanical engineering and applied mechanics department noted the importance of the Summer Academy for the high school students that have aspirations for a career in math, science and engineering. First of

helping to keep the students in the program.

"One of the ideas we came up with to get the students interested is that we're even going to study the science of making pizza with these young students in these sessions and Sunday academies. If that's what it takes to attract them and keep them interested, that's fine. We certainly are emphasizing to the students that there are doors waiting to be opened in these fields — and we want to show them how to open those doors," stated Pieri.

At the conclusion of the five-year project, the tribal colleges should have programs in place and individuals that will be able to continue the program. The experience of the NDSU faculty working directly with the Native American students also lends to the benefits of the program concept. It is fully anticipated that the reservations high school instructors in math and science will be involved and work in a collaborative fashion with the TMCC and NDSU faculty.

"These instructors from NDSU who work with the students are going to be able to help the students so much in their transition into the university system. Sometimes it's very hard for our students to go into these big universities because it's so much of a culture shock. But the students will be familiar with the faculty and curriculum by going through this program. The faculty at NDSU will also be familiar with the students and this is going to assist the Indian students greatly. We expect so much success out of this, not only because of what the program concept and what it offers, but also because of the NDSU faculty and their commitment to this. They have taken this into their hearts almost on a personal basis to make sure the program succeeds. It's a bright future for our college with cooperative working relationships among the tribal colleges and a university like NDSU, which is recognized as one of the top engineering universities in the nation," said Davis.

For more information on the new collaborative program, contact Carol Davis, TMCC Vice-President at (701) 477-7862.



TMCC Instructor Charmaine Disrud (Left) converses with Laurel Vermillion (Sitting Bull College) and Floyd Patterson (NDSU) about her Physics Dept.

that when the students transfer, special support systems, including \$1200 scholarships will be available. Additionally, the students will have many opportunities to participate in cooperative work experience positions with

all, he realizes that the Summer Academy and summer sessions must have subjects and topics to pique the interest of the young student. In that way, the participation in the three fields of study will increase along with

Tribes, NDSU collaborate to spur interest in math, science

BISMARCK (AP) — The state's five tribal colleges are collaborating with North Dakota State University to boost interest among American Indian students in math, science and engineering.

The program is designed to motivate Indian children to pursue careers in those fields and then nurture them during their studies at tribal colleges and ultimately NDSU, said G. Padmanabhan, the university's chair of civil engineering and construction.

Indians make up less than 5 percent of the students at NDSU majoring in a math, science or engineering fields, Padmanabhan said.

"We would be happy if we could sustain about 20 students coming into these fields from tribal colleges," he said.

Students entering tribal colleges generally are behind in math and science areas, said Erich Longie, president of Little Hoop Community College on the Fort Totten

Reservation.

"When we encourage them to (pursue) a math and science career, because of the amount of courses required, they usually decline," he said.

Carol Davis, vice president of Turtle Mountain Community College in Belcourt, said children growing up on reservations generally aren't exposed to math and science careers.

"We don't have a lot of models in our communities — we don't have a lot of tribal engineers," she said.

"Once we introduce the career in its practical aspects, and how to prepare for it, once we start having some successes, we will have students begin planning when they're freshmen and sophomores in high school, not just when they're freshmen in college."

The program will include a series of student summer camps, as well as semimonthly problem-solving sessions for high school students that

will be conducted over the state's Interactive Video Network during the school year.

American Indian students also will be eligible for scholarships and will be mentored as they progress through the college and university system.

The program is funded at least through the summer of 2002. The project is getting a \$575,000 grant from a U.S. Navy program aimed at generating interest in engineering among minorities. An additional \$700,000 is available for fiscal year 2003-2004 if the project proves successful.

Padmanabhan said the program will be evaluated internally and by officials from other academic institutions.


Other tribal colleges in North Dakota are Fort Berthold Community College in New Town, Sitting Bull College in Fort Yates and United Tribes Technical College in Bismarck.

APPENDIX G

FINANCIAL STATUS REPORT

(Short Form)

(Follow instructions on the back)

1. Federal Agency and Organizational Element to Which Report is Submitted DEPARTMENT OF NAVY Office of Naval Research Regional Office N00014-99-1-0969		2. Federal Grant or Other Identifying Number Assigned By Federal Agency Grant 430		OMB Approval No. 0348-0038	Page of 1 of 1 pages
3. Recipient Organization (Name and complete address, including ZIP code) Turtle Mountain Community College Box 340 Belcourt, N.D. 58316					
4. Employer Identification Number 45-0323401		5. Recipient Account Number or Identifying Number Grant 430		6. Final Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7. Basis <input checked="" type="checkbox"/> Cash <input type="checkbox"/> Accrual					
8. Funding/Grant Period (See instructions) From: (Month, Day, Year) 07-01-99		To: (Month, Day, Year) 06-30-02		9. Period Covered by this Report From: (Month, Day, Year) 07-01-99	
				To: (Month, Day, Year) 09-30-99	
10. Transactions:				I Previously Reported	II This Period
					III Cumulative
a. Total outlays					13,962.00
b. Recipient share of outlays					
c. Federal share of outlays					13,962.00
d. Total unliquidated obligations					
e. Recipient share of unliquidated obligations					
f. Federal share of unliquidated obligations					
g. Total Federal share(Sum of lines c and f)					13,962.00
h. Total Federal funds authorized for this funding period					13,962.00
i. Unobligated balance of Federal funds(Line h minus line g)					
11. Indirect Expense	a. Type of Rate(Place "X" in appropriate box) <input type="checkbox"/> Provisional <input checked="" type="checkbox"/> Predetermined <input type="checkbox"/> Final <input type="checkbox"/> Fixed				
	b. Rate 15.5% 41.0%	c. Base 9195 2370	d. Total Amount 2397.00	e. Federal Share 2397.00	
12. Remarks: Attach any explanations deemed necessary or information required by Federal sponsoring agency in compliance with governing legislation.					
13. Certification: I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays and unliquidated obligations are for the purposes set forth in the award documents.					
Typed or Printed Name and Title Leonard Dauphinais, Comptroller				Telephone (Area code, number and extension) (701) 477-7861 ext 2075	
Signature of Authorized Certifying Official 				Date Report Submitted 10/28/99	

APPENDIX H

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE (DD-MM-YYYY) 20 October 1999		2. REPORT TYPE Technical Report		3. DATES COVERED 01 July 1999 to 30 Sept. 1999	
4. TITLE AND SUBTITLE An Adaptive Systemic Initiative of Tribal Collaboration for Increasing Native American Participation in Mathematics, Science and Engineering				5a. CONTRACT NUMBER N00014-99-1-0969	
				5b. GRANT NUMBER N00014-99-1-0969	
				5c. PROGRAM ELEMENT NUMBER	
				5d. PROJECT NUMBER 99PRO7629-00	
6. AUTHOR(S) Davis, Carol A.				5e. TASK NUMBER NA	
				5f. WORK UNIT NUMBER NA	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Turtle Mountain Community College Box 340 Belcourt, North Dakota 58316				8. PERFORMING ORGANIZATION REPORT NUMBER #1	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Turtle Mountain Community College Box 340 Belcourt, North Dakota 58316				10. SPONSOR/MONITOR'S ACRONYM(S) NA	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S) NA	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for Public Release. Distribution is unlimited.					
13. SUPPLEMENTARY NOTES None					
14. ABSTRACT The Turtle Mountain Community College in partnership with the North Dakota State University, Fargo, ND, was awarded a grant to support activities designed to stimulate the interest of American Indian youth from the North Dakota reservations in careers such as engineering and those involving higher level mathematics, science and technology skills. This technical report represents the first term beginning 01 July 1999 to 30 September 1999. During this period, the staff from the two institutions involved planned the five-year project. The amount of the award for this period was \$13,962.					
15. SUBJECT TERMS Sunday Academies - High school American Indian students come together once each month on Sundays to work on program objectives.					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT		18. NUMBER OF PAGES
a. REPORT UNCLASSIFIED	b. ABSTRACT	c. THIS PAGE	See Attached SAR		41
			19a. NAME OF RESPONSIBLE PERSON Carol Davis		19b. TELEPHONE NUMBER (include area code) (701) 477-7867